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not been discussing the general elements in scientific progress; my purpose has been much less ambitious. In speaking to my colleagues in other fields I have tried to give an account of the faith that is in me so that they shall see what sort of motives (aside from those of esthetic delight, which however are central) the mathematician has in the work which he pursues. With this purpose before me I have spoken of just one side of the fundamental requisites of scientific progress. And now I wish to say with emphasis that I have the keenest appreciation of the use and purport of other methods and the sharpest delight in the contemplation of their achievements—achievements so different from any to be wrought out by my own familiar and loved mathematical tools. One could hardly speak of these other methods without becoming eloquent in his admiration of them. They are left unmentioned, then, not because I do not appreciate them, but because they do not fall within the scope assigned to this discussion.

My purpose will have been served if I have tended to produce in your minds a keener appreciation of the place of mathematics in the development of scientific thought; and particularly if I have induced in you a conception and feeling of the consecration with which choice mathematical spirits devote their energies to penetrating into the unknown regions of their own creations and to opening up larger areas of the enormously expanding field of mathematics which has grown more in the present generation perhaps than in any other in the history of the world.

R. D. CARMICHAEL

SCIENTIFIC EVENTS

THE GAUTHIOT MEMORIAL

DR. ROBERT GAUTHIOT, directeur d'études adjoint in the Ecole des Hautes Etudes, one

of the most brilliant Oriental scholars of our time, died in Paris on September 11, 1916, at the age of forty, from the effects of a wound received as captain of infantry while gallantly leading his company to a grand attack. Gauthiot was a real genius, and has made lasting contributions to Iranian and Indo-European philology, playing a prominent part in the recent movement of opening up the history of Central Asia. To his ingenuity and acumen is due the complete decipherment of the Sogdian, an Iranian language preserved in ancient manuscripts which some years ago were discovered in Turkestan. He conducted two highly successful expeditions into the Pamir for linguistic exploration. Hardly had he reached the Pamir for the second time in July, 1914, when news of the outbreak of the war determined him to return to France and to take his place in the defense of his country, distinguishing himself by his bravery and receiving the *croix de guerre*.

The loss caused to science by his premature and tragical death is irreparable. He has left in straitened circumstances a widow and four daughters, the youngest being three years of age. A committee has been organized for the purpose of raising a Gauthiot Memorial Fund in commemoration of the great scholar, this fund to be utilized for the maintenance of his destitute family and for the publication of a Gauthiot Memorial Volume. Any further information, if desired, will be gladly given by the secretary. Contributions which will be gratefully acknowledged may be sent to some member of the American committee, or if preferred, directly by draft on Paris to Professor A. Meillet (65 rue d'Alésia, Paris XIV^e, France), treasurer of the French Board of Trustees for the Gauthiot Memorial Fund.

The American committee consists of:

Martin A. Ryerson, 134 South La Salle Street, Chicago—*Honorary President*.

A. V. Williams Jackson, professor of Iranian and Sanskrit, Columbia University, New York.

James H. Breasted, professor of Egyptology and Oriental History, University of Chicago.

Walter E. Clark, professor of Sanskrit, University of Chicago.

B. Laufer, curator of anthropology, Field Museum, Chicago—*Secretary*.

AWARDS BY THE FRANKLIN INSTITUTE

THE Franklin Institute, acting through its Committee on Science and the Arts, has recently awarded medals to the authors of especially meritorious papers that appeared in the Institute's *Journal* during the year 1916. In making these awards, the committee adopted the following resolutions:

That the Howard N. Potts Medal be awarded to Professor Ulric Dahlgren for his paper entitled, "The Production of Light by Animals," appearing in various issues of the 1915 and 1916 *Journal* of The Franklin Institute, forming an original and comprehensive treatise of an extremely interesting and important subject.

That the Edward Longstreth Medal of Merit be awarded to Mr. George A. Rankin for his paper entitled "Portland Cement," appearing in the June, 1916, issue of the *Journal* of The Franklin Institute, a highly important contribution to the theory of cement chemistry.

That Edward Longstreth Medals of Merit be awarded to Professor A. E. Kennelly, Messrs. F. H. Achard and A. S. Dana, for their joint paper entitled "Experimental Researches on the Skin Effect in Steel Rails," appearing in the August, 1916, issue of the *Journal* of The Franklin Institute, containing new and valuable experimental data, heretofore unavailable to the designers of track return systems.

That the Edward Longstreth Medal of Merit be awarded to Mr. John D. Ball for his paper entitled, "Investigation of Magnetic Laws for Steel and Other Materials," appearing in the April, 1916, issue of the *Journal* of The Franklin Institute, containing new and valuable information relating to the magnetic properties of materials used in the magnetic circuits of electrical machinery.

That the Edward Longstreth Medal of Merit be awarded to Professor Dayton C. Miller, for his paper entitled "A 32-Element Harmonic Synthesizer," appearing in the January, 1916, issue, and his paper entitled, "The Henrici Harmonic Analyzer and Devices for extending and facilitating its Use," appearing in the September, 1916, issue of the *Journal* of The Franklin Institute, a comprehensive and lucid discussion of harmonic synthesis and analysis, together with descriptions of perfected apparatus for synthesizing and analyzing functions of one variable expressible by Fourier's equation.

THE AMERICAN CERAMIC SOCIETY AND MILITARY PREPAREDNESS

THE American Ceramic Society at its annual meeting held in New York, March 5 to 8, authorized the formation of a Committee on Military and Economic Preparedness, which has now been organized and has begun its activity. The committee has offered its services to the National Defense Council and the National Research Council.

This society devotes itself to the study of the chemistry and engineering of the silicate industries, embracing the manufacture of clay products, glass, cements and other cognate lines like the manufacture of abrasive wheels, the enameling of metals, etc. It does not deal with the artistic or historical phases as the name alone might lead one to infer. In its membership it has many of the leading specialists in the country, all of whom are eager to serve the country in this crisis. A census has been taken of the membership with a view to showing the number of firms and specialists available in each subdivision of the field, which have military significance.

Up to the present time eight divisions have been created which embrace in their membership leading manufacturers and technical men. The personnel of the committee is as follows:

Edward Orton, Jr., chairman, Ohio State University, Columbus, O.

A. V. Bleining, vice-chairman, Bureau of Standards, Pittsburgh, Pa.

Divisions and chairmen of sub-committees:

Abrasives: R. C. Purdy, Norton Company, Worcester, Mass.

Chemical Stone Ware: R. H. Minton, Metuchen, N. J.

Enameled Iron and Steel: R. D. Landrum, Harshaw, Fuller & Goodwin Co., Cleveland, O.

Glass for Optical Purposes: C. H. Kerr, American Optical Co., Southbridge, Mass.

Hydraulic Cements: P. H. Bates, Bureau of Standards, Pittsburgh, Pa.

Porcelain, for Electrical Purposes, Spark Plugs, etc.: L. E. Barringer, General Electric Co., Schenectady, N. Y.

Raw Materials for the Ceramic Industries: A. S. Watts, Ohio State University, Columbus, O.

Refractories: A. V. Bleining, Bureau of Standards, Pittsburgh, Pa.